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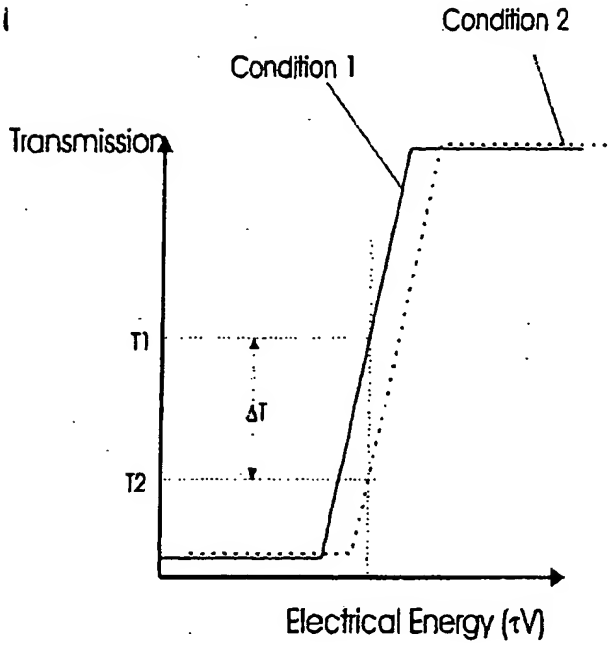
FIG 1



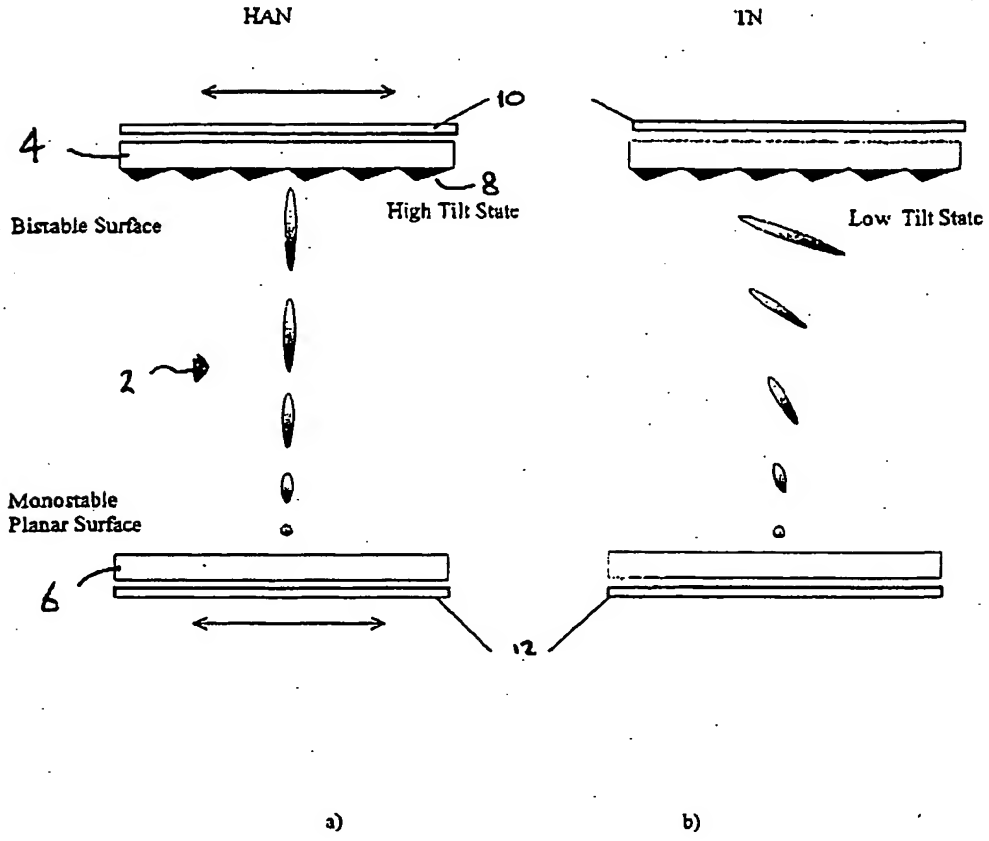

HAN
TN
10
4
8
Bistable Surface
High Tilt State
Low Tilt State
2
Monostable
Planar Surface
6
12
a)
b)

Figure 2.

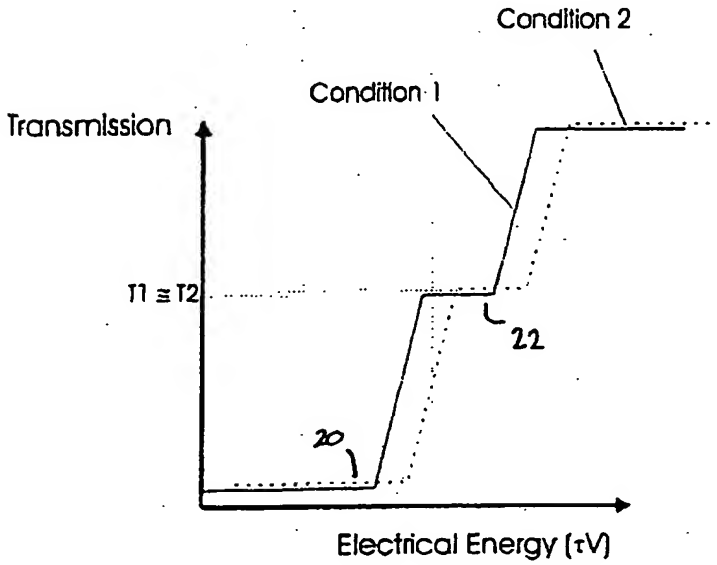


Figure 3.

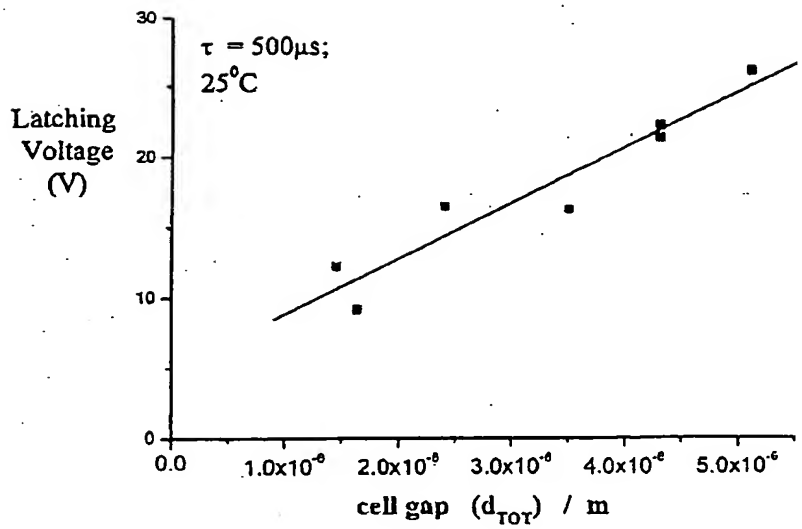


Figure 4.

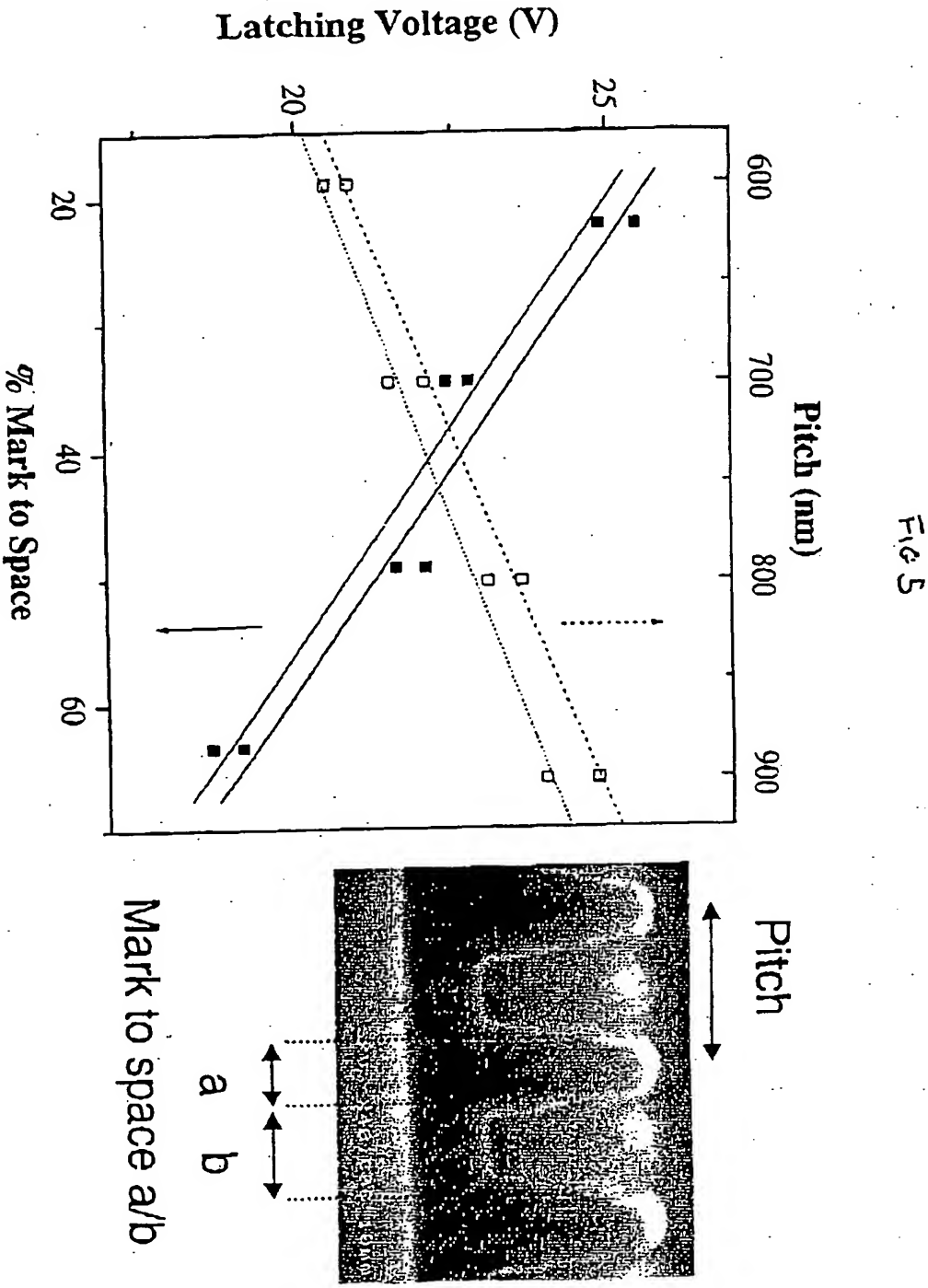

Latching Voltage (V)
20
25
% Mark to Space
20
40
60
Pitch (nm)
600
700
800
900
Mark to space a/b
a
b
Pitch

FIG 5

App No.: 10/612,877 Docket No.: 52712000400
Inventor: John C. JONES et al.
Title: PATTERNED LIGHT MODULATING DEVICE

Fig 6

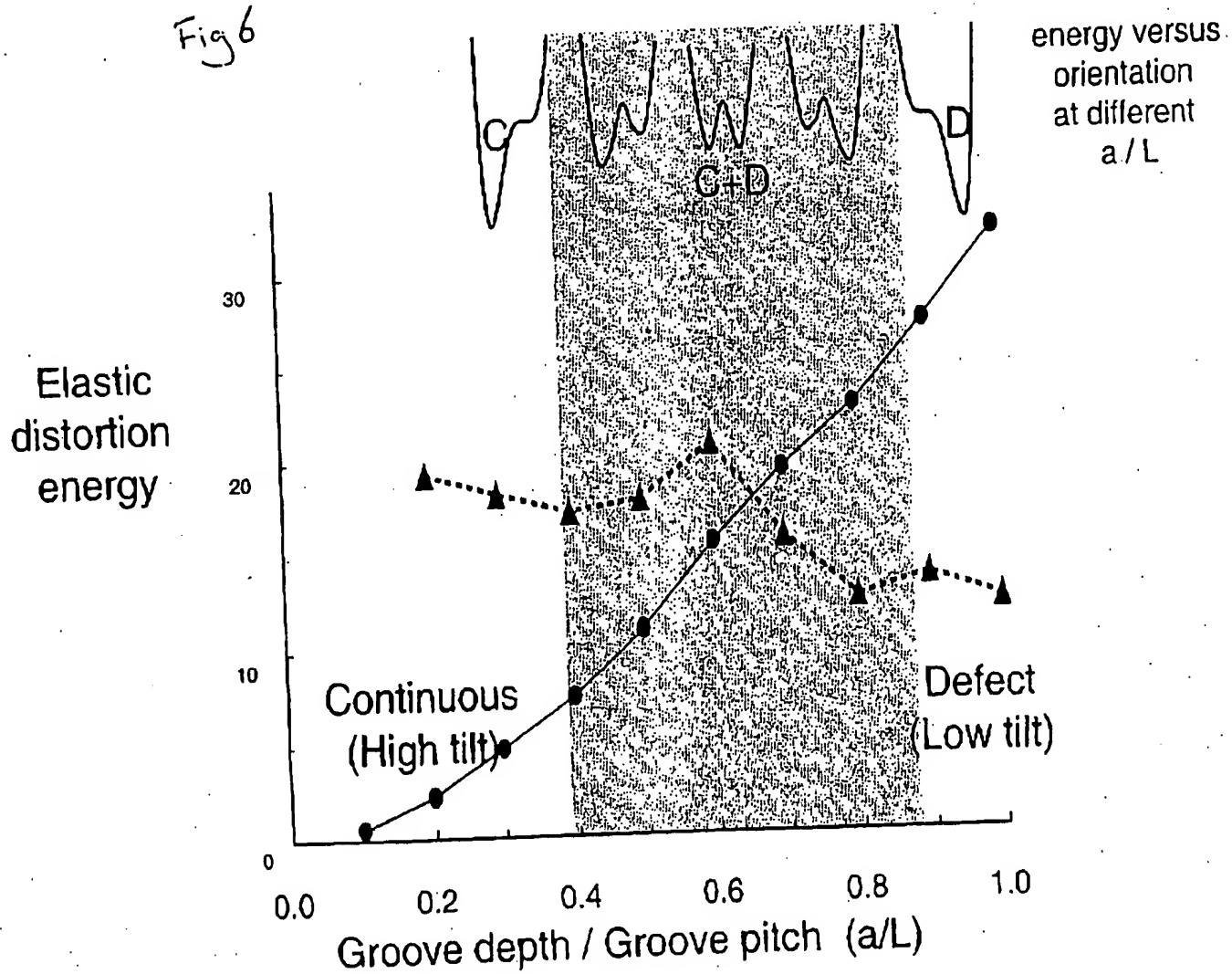


FIG 7

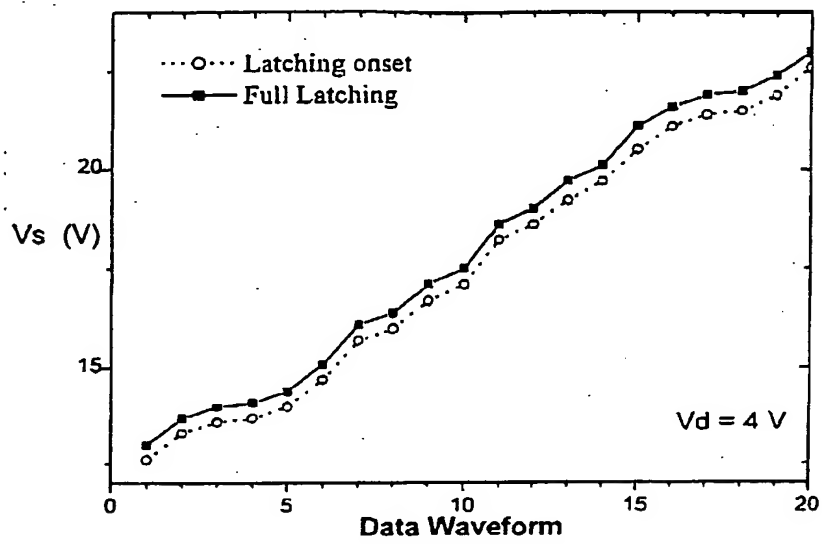

Latching onset
Full Latching
Vs (V)
20
15
Vd = 4 V
0
5
10
15
20
Data Waveform

FIG 8

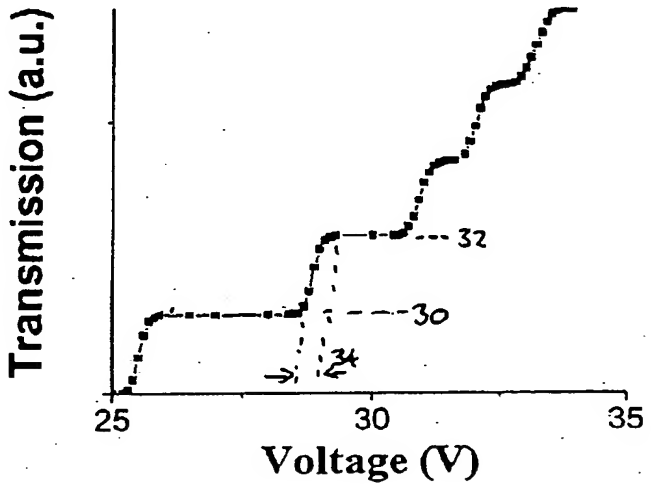

Transmission (a.u.)
32
30
34
25
30
35
Voltage (V)

FIG 9

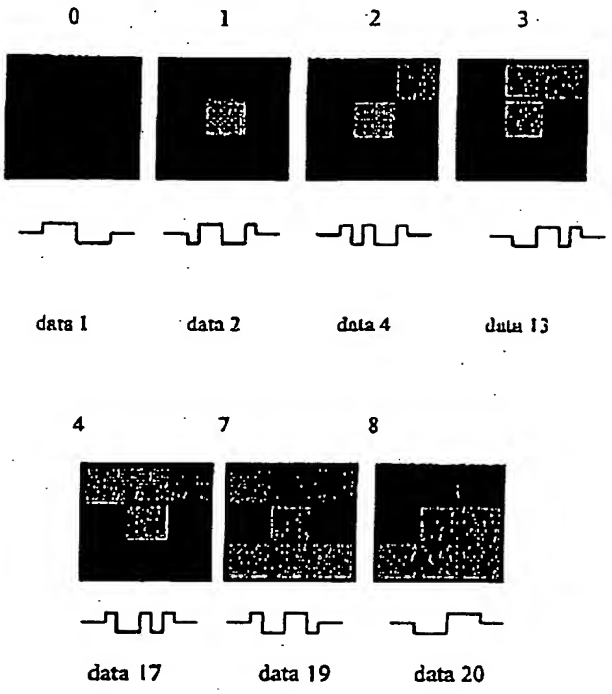
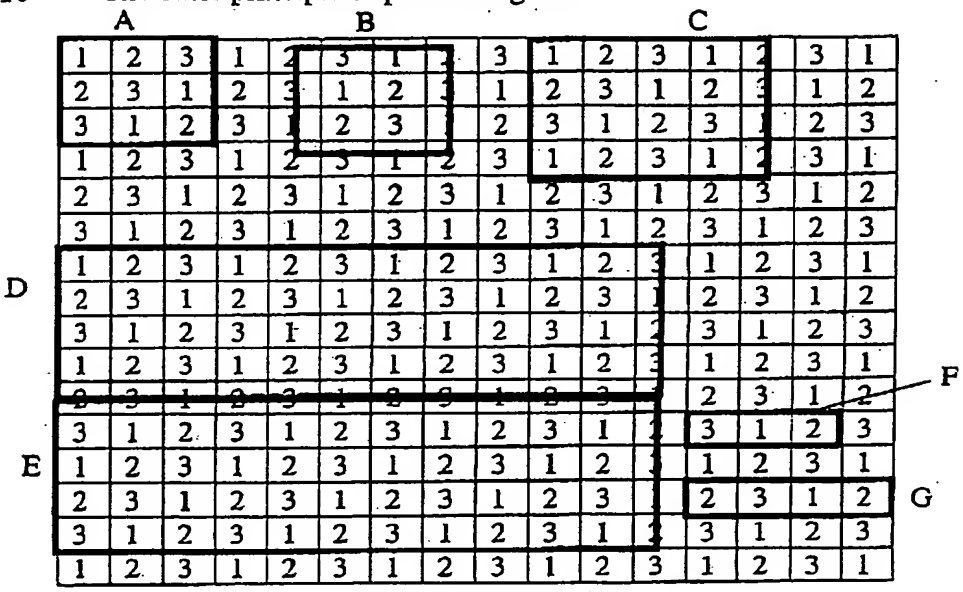


Figure 10 The basic principle of patterned grids.



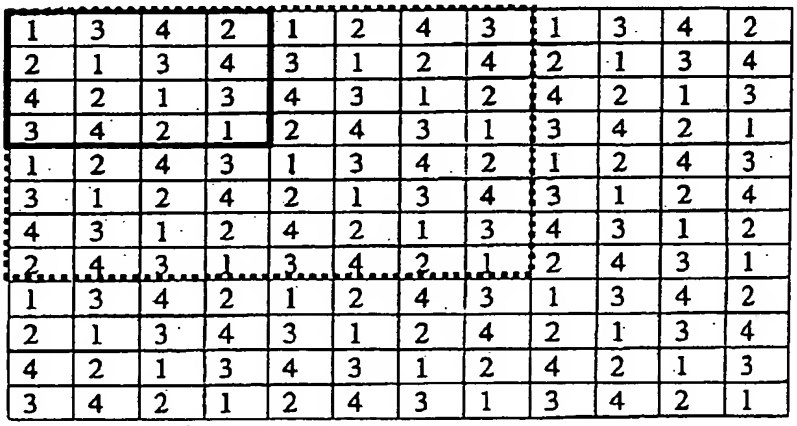


Figure 11

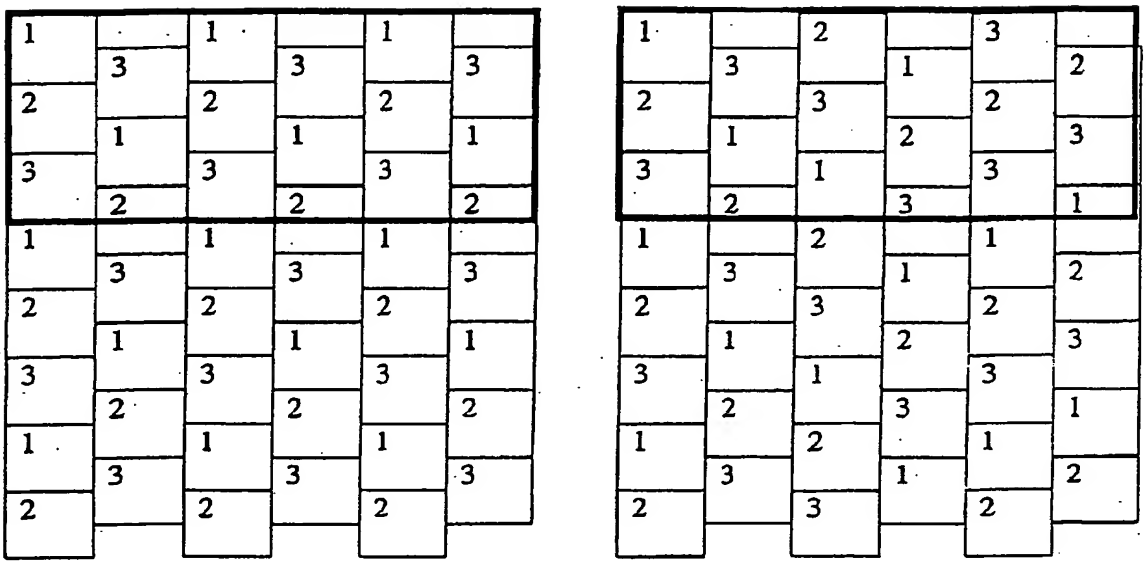


Figure 12 Examples of super structures used for 4 analogue grey levels.

Figure 13

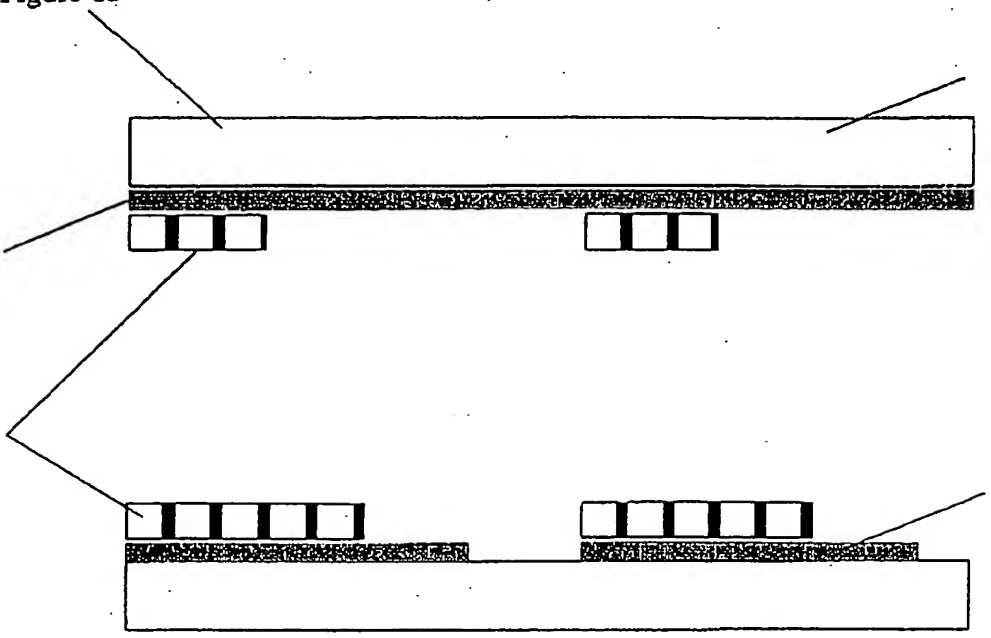
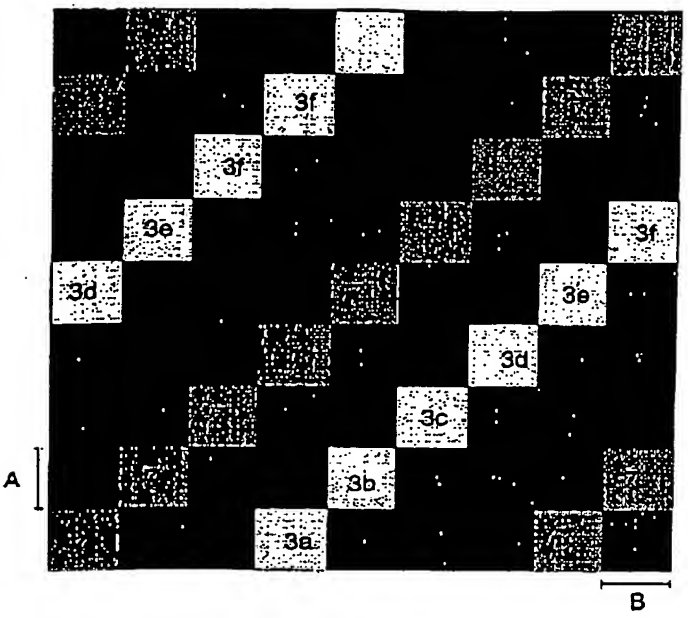


Figure 14

	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
A	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
B	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
C	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1
	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1
	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1

Figure 15a



Grid Structure:
Comprising 7 different pitches
Pitch 1=1200nm
Pitch 2=1100nm
Pitch 3=1000nm
Pitch 4=900nm
Pitch 5=800nm
Pitch 6=700nm
Pitch 7=600nm

Equal mark to space
Pitch 1=600nm chrome 600nm gap
Pitch 2=550nm chrome 550nm gap
Pitch 3=500nm chrome 500nm gap
etc

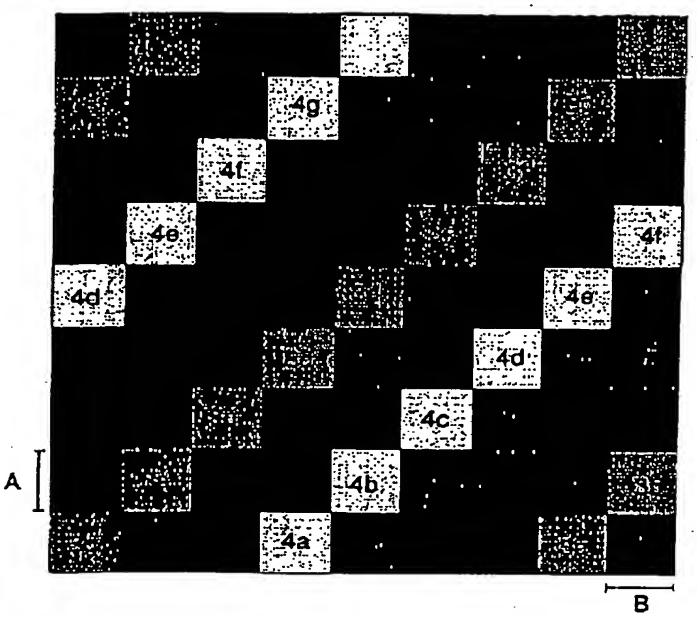
Horizontal repeat unit 49 squares with 1 square translation between successive rows.
This is due to corrections for imperfect 4.8micron gridding

Each Grating Length A=4.8microns
Each grating width is tiled to fit a whole number of grooves, however in order to rebalance the area dimension B expresses the width of the grating regions:

Pitch 1: 4 whole pitches B=4.8microns
Pitch 2: 2a 4 whole pitches B=4.4microns
2b 5 whole pitches B=5.5microns
2c 4 whole pitches B=4.4microns
2d 4 whole pitches B=4.4microns
2e 5 whole pitches B=5.5microns
2f 4 whole pitches B=4.4microns
2g 4 whole pitches B=4.4microns
Pitch 3: 3a 5 whole pitches B=5.0microns
3b 5 whole pitches B=5.0microns
3c 5 whole pitches B=5.0microns
3d 5 whole pitches B=5.0microns
3e 5 whole pitches B=5.0microns
3f 4 whole pitches B=4.0microns
3g 5 whole pitches B=5.0microns
Pitch 4: 4a 5 whole pitches B=4.5microns
4b 5 whole pitches B=4.5microns
4c 6 whole pitches B=5.4microns
4d 5 whole pitches B=4.5microns
4e 5 whole pitches B=4.5microns
4f 5 whole pitches B=5.4microns
4g 5 whole pitches B=4.5microns
Pitch 5: 6 whole pitches B=4.8microns
Pitch 6: 6a 7 whole pitches B=4.9microns
6b 7 whole pitches B=4.9microns
6c 7 whole pitches B=4.9microns
6d 7 whole pitches B=4.9microns
6e 6 whole pitches B=4.2microns
6f 7 whole pitches B=4.9microns
6g 7 whole pitches B=4.9microns
Pitch 7: 8 whole pitches B=4.8microns

Error row a: -0.4 microns
Error row b: +0.7microns
Error row c: +0.5microns
Error row d: -0.4microns
Error row e: +0.0microns
Error row f: -0.5microns
Error row g: -0.4microns

Fig 15b



Grid Structure:
Comprising 7 different pitches
Pitch 1=1200nm
Pitch 2=1100nm
Pitch 3=1000nm
Pitch 4=900nm
Pitch 5=800nm
Pitch 6=700nm
Pitch 7=600nm

Equal mark to space
Pitch 1=600nm chrome 600nm gap
Pitch 2=550nm chrome 550nm gap
Pitch 3=500nm chrome 500nm gap
etc

Horizontal repeat unit 49 squares with 1 square translation between successive rows.
This is due to corrections for imperfect 4.8micron gridding

Each Grating Length A=4.8microns
Each grating width is tiled to fit a whole number of grooves, however in order to rebalance the area dimension B expresses the width of the grating regions: widths for individual labelled areas identical to area 3 (pattern 7) but as stated above regions have been reordered.

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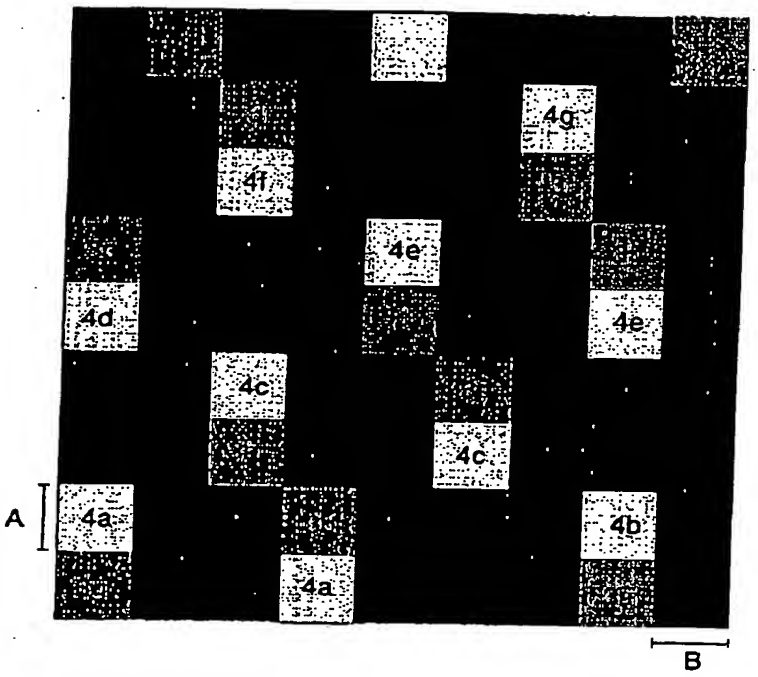
Fig 15c



Dimensions of regions (2a etc) identical to those written down for Area 3. However again the layout of regions is swaped around.
Horizontal repeat unit 49 squares
with 1 square translation between
successive rows.
Row1: 1 2 4 6 7 5 3
Row 2: 1 3 5 7 6 4 2
Row 3 same as row 1
Row 4 same as row 2 etc

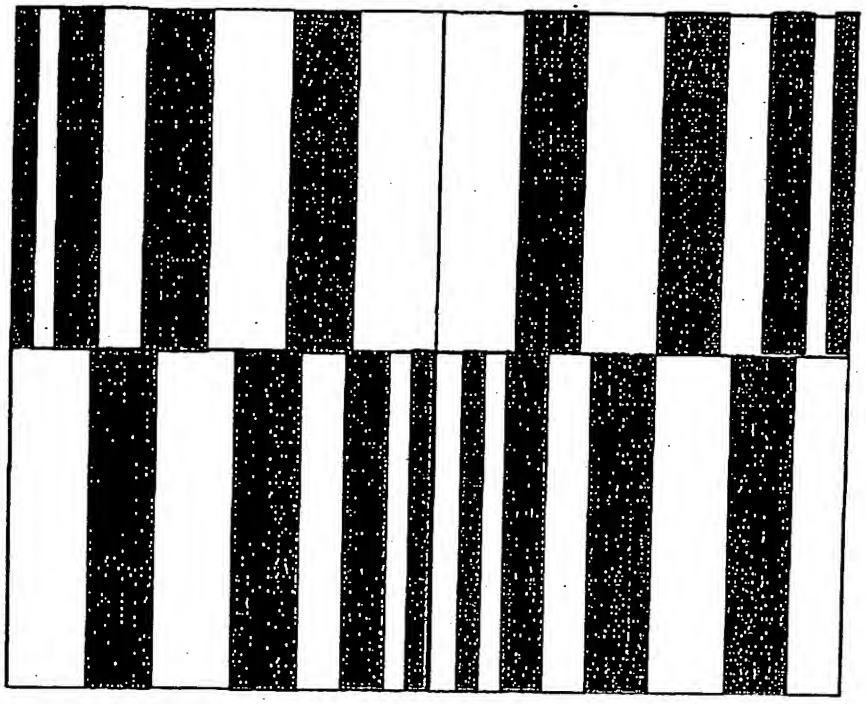



Figure 16